Primary Healthcare Reports

Case Report

Diode Laser to Treat the Lingual Venous Malformation -Case Report

Meriem Harrizi[1], Laila Kissi[1], Ihsane Ben Yahya[2]

[1]*Department of Oral Surgery at the Dental Consultation and Treatment Center, Ibn Rochd University Hospital, Faculty of Dental Medicine, Casablanca, Morocco*
[2]*President, FDI World Dental Federation*

Correspondence

Meriem Harrizi

Department of Oral Surgery at the Dental Consultation and Treatment Center, Ibn Rochd University Hospital, Faculty of Dental Medicine, Casablanca, Morocco

- Received Date: 07 Mar 2024
- Accepted Date: 19 May 2024
- Publication Date: 01 Jun 2024

Abstract

Vascular anomalies are congenital errors in vascular development, often involving the head, neck, and mouth. These anomalies are subdivided into vascular tumors (hemangiomas) and vascular malformations and remain poorly understood. Various treatment modalities are available, including laser therapy, steroid therapy, embolization, β-blocker therapy, sclerosant therapy, surgery, or cryosurgery. Laser therapy has several advantages over other methods. This article reports the usefulness of diode laser treatment for vascular anomalies in the oral cavity by presenting a case.

Introduction

Vascular anomalies are congenital errors in vascular development, often involving the head, neck, and mouth. The new classification of vascular anomalies identifies two main categories: vascular tumors and arteriovenous malformations (AVM). Esthetic problems, hemorrhaging episodes, or impairment of normal oral functions are the main reasons for treating vascular anomalies. Various treatment modalities are available, including laser therapy, steroid therapy, embolization, β-blocker therapy, sclerosant therapy, surgery, or cryosurgery. The classic treatments for these lesions are sclerotherapy with the injection of sclerosant agents and surgery, which occasionally result in complications such as significant deformity, prolonged pain, skin necrosis, nerve damage, systemic toxicity, and hemorrhagic phenomena. Because of these complications, laser therapy has recently been introduced as one of the main treatments for vascular lesions. The aim of laser therapy for hemangiomas and similar lesions is the selective destruction of tumoral vessels through the absorption of laser photons by hemoglobin molecules in red blood cells. The thermal energy of laser photons scatters radially within the blood vessel, inducing selective microvascular hazardous effects through photocoagulation and mechanical injury. The chosen wavelength should be absorbed selectively by hemoglobin molecules. Several factors such as the size of vessels, depth of the lesion, area of the body treated, laser spot size, skin type, and fluence can affect the absorption of the laser. There are several types of lasers used in laser surgery. There are three types of modes of operation: continuous wave lasers (CWLs) such as CO2, argon, and diode lasers; pulsed laser systems such as Nd:YAG and Er:YAG lasers; and chopped mode, which is a variety of continuous mode that has equal power photons but many equal distance interruptions in milliseconds. There are some contraindications, both absolute and relative. The absolute contraindications are active local infection or photo-aggravated skin diseases and medical conditions. The relative contraindications are unstable vitiligo, psoriasis, keloid and keloidal tendencies, patients on isotretinoin, or patients who are uncooperative or have unrealistic expectations.

Case report

A 25-year-old female patient with a non-contributory medical history reported to the Department of Oral Surgery with the chief complaint of an oral bluish lesion. This nodule caused discomfort, especially during mastication. The swelling was not associated with any pain. Intraoral examination revealed swelling with bluish discoloration on the tongue (Figure 1A). The swelling was soft in consistency and nontender on palpation. The treatment of the lesion was performed under local anesthesia using a diode laser, promoting a rapid color variation from blue-violet to white and leading to complete healing after 20 days (Figure 1B, C, D).

Citation: HARRIZI M, KISSI L, BEN YAHYA I. Diode Laser to Treat the Lingual Venous Malformation -Case Report. Prim Healthcare. 2024;1(1):02.

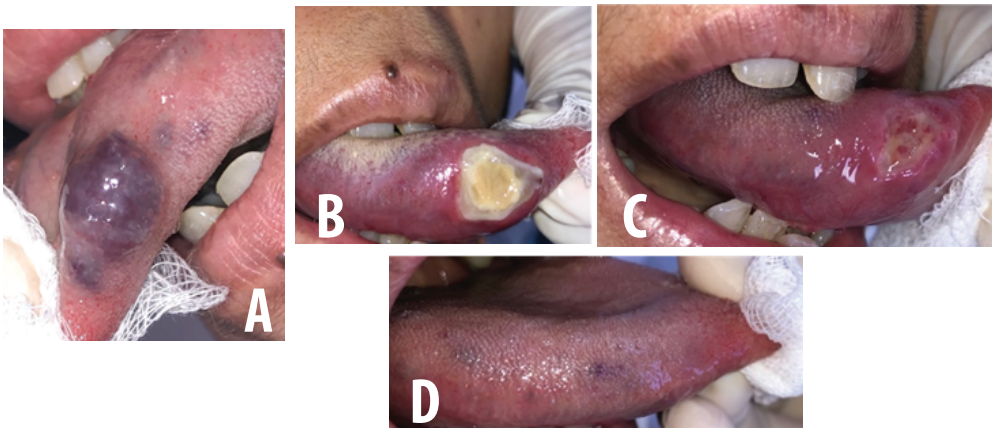

Figure 1. *A)Blue-violet vascular lesion of the tongue margin with superficial dimension from 3 to 6cm, covered by not-ulcerated mucosa .B,C) The lesion was treated by transmucosal diode laser application, promoting a rapid color variation from blue-violet to white, and leading to the complete healing after 20 days (D).*

Discussion

The first anatomic-pathological classification of vascular lesions was developed by Virchow, 14 classifying vascular tumor into angiomas and lymphangiomas, which were then characterized as simplex, cavernosum and racemosum. In1982, Mulliken and Glowacki clarified the field of vascular anomalies by categorizing these lesions based on their clinical behavior and cellular kinetics in haemangioma and vascular malformations. Nowadays, they are divided into vascular tumors (including infantile haemangioma and congenital haemangioma) and vascular malformations(including capillary, lymphatic, venous, arterial and combined malformations).The present case have a venous malformation in the tongue.

Human maxillofacial tissues consist of different tissues; thus the clinician must first choose the appropriate laser for each treatment. Different types of lasers are applied in regard to specific tissues, for soft tissue treatments, the practitioner can use any available wavelength. All laser photons are absorbed by one or more of the soft tissue components. Lasers with short wavelengths (diode, Nd:YAG) are nonreactive with healthy tooth enamel; however, Er:YAG can remove hard and soft tissues near the operation site. The treatment of the lesion of our case is the application of diode laser.

Among all spotlights that have prove surgical capabilities (CO2, NeodimioYAG, KTP, diode), the diode ray is presently the most extensively used for surgical excision of proliferating benign and nasty lesions in the oral cavity. This approach avoids bleeding during the operation and reduces the frequence of postsurgical complications(edema, infection, aesthetically undesirable scars), like the present case .

Conclusion

Diode lasers are generally accepted as effective tools to treat vascular malformations in the head and neck, yet there are no standardized treatment protocols for this treatment approach.

References

1. Limongelli L, Tempesta A, De Caro A, et al. Diode Laser Photocoagulation of Intraoral and Perioral Venous Malformations After Tridimensional Staging by High Definition Ultrasonography. Photobiomodul Photomed Laser Surg. 2019;37(11):722-728. doi: 10.1089/photob.2019.4635.
2. Buckmiller LM, Richter GT, Suen JY. Diagnosis and management of hemangiomas and vascular malformations of the head and neck. Oral Dis. 2010;16(5):405-418. doi:10.1111/j.1601-0825.2010.01661.x
3. Danesh MJ, Vazirnia A, Anderson RR. Diode laser for the treatment of lingual venous malformations. J Am Acad Dermatol. 2020;83(1):e3. doi:10.1016/j.jaad.2019.11.043 V. MonteiroLS , Azevedo A, Cadilhe S, Sousa D, Faria C, Martins M. Laser treatment of vascular anomalies of oral cavity. 2013; 54(3): 171-175.
4. Azma E, Razaghi M. Laser Treatment of Oral and Maxillofacial Hemangioma. J Lasers Med Sci. 2018;9(4):228-232. doi:10.15171/jlms.2018.41.